FEDERAL ENERGY OFFICE
WASHINGTON, D.C. 20461

APR 26 1974

TO : Distribution List

FROM : John Knubel

SUBJECT: Project Independence: International Assessment

The attached paper is an outline of the scope, tasking, and agency participation planned for the international assessment of Project Independence. Given the time constraints involved, I would greatly appreciate your immediate considered perusal of its contents. I also wish to invite you to participate in the first meeting of our International Assessment Coordinating Group, on Tuesday, April 30, at 10:00 a.m., at the Federal Energy Office in Room 3428 of the Benjamin Franklin Station, 12th & Pennsylvania Avenue, N.W. At that time, I'd like to have your comments on the approach outlined in the paper. In addition, I'd greatly appreciate your views on the degree of support available within your agency and the extent to which external contract/consulting support will be necessary. These considerations should reflect the severe time constraints under which the Project Independence assessments are operating, and the extent to which contract support can be made available within those constraints.

Please direct any inquiries to Mr. C. B. Thompson, Deputy Director, Producer Country Affairs and Emergency Supply, telephone number 961-8022.

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FEDERAL ENERGY OFFICE

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APR 26 1974

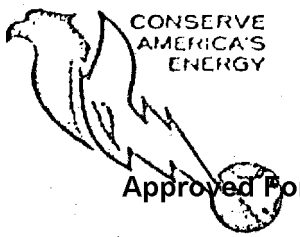
PROJECT INDEPENDENCE: INTERNATIONAL ASSESSMENT

I OVERVIEW

1. The domestic and international consequences of the recent oil embargo and rapid escalation in world oil prices imposed by OPEC are still unfolding. Even now, however, the U.S. is well aware that a far reaching reappraisal is necessary of its domestic energy production and consumption patterns as well as its role and relationships to other major energy consuming and producing nations of the world.

2. Indeed, the basic goal of Project Independence is to place the U.S. in a position such that no country can dictate our foreign policy or have severe impact on our domestic policy. Our goal in Project Independence Blueprint Studies is, therefore, to develop a comprehensive program for meeting future U.S. energy requirements which minimize the economic and political costs associated with meeting this objective.

3. Whatever growth rates are assumed in projecting future U.S. energy demands, these demands can only be met through a combination of domestically produced supply and imports. There are far reaching international implications of how this balance between future domestic and foreign supply is obtained -- economic, political, and military. Indeed, U.S. international trade interests are clearly at stake in planning the investments, levels of domestic energy production and their costs, associated with meeting U.S. energy requirements.



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4. Moreover, with world oil prices grossly inflated vis-a-vis production costs in the Middle East, the U.S. faces a potential two-sided energy economic warfare game in which the U.S. must act first, so to speak, by adopting a Project Independence program plan, to which producer countries can then seek to control world oil prices to their best advantages. On the other hand, if the future U.S. domestic/import energy balance results in a significant dependence on imports, the domestic and international costs of the risk of an import interruption may well be too high.

II OBJECTIVE

1. This suggests that the combined effects of world price and supply interruption capabilities must be reflected in the prices paid for U.S. imports. And to that end, the international assessment effort must identify economic, political and military factors influencing the probabilities of interruption of alternative U.S. import postures, and recommend policy initiatives which minimize the total costs and likelihood of supply interruptions.

2. The objective of the international assessment of Project Independence is, therefore, to develop net assessments of alternative U.S. international postures and costs in support of Project Independence.

III ANALYTICAL APPROACH

1. There are three primary alternatives by which the U.S. can achieve an acceptable energy consumption posture given the apparent risks and uncertainties associated with world-wide energy supplies.

a) It can increase the amount of energy supplied domestically,

b) It can constrain the rate of growth in consumption,

c) It can enhance the security of imports.

2. There are marginal costs associated with decreasing domestic demand, increasing domestic supply, or increasing dependence on import supply. The criterion for evaluating the implicit trade-offs among these alternatives is to equalize their respective marginal costs.

3. In this international analysis, primary emphasis will be given to oil and natural gas because in the time frame under consideration in Project Independence, 1975-85, other imported materials are of lesser importance in an international environment.

4. The U.S. would certainly not be motivated to import any energy at all if sufficient domestic supply to meet domestic demand could be produced at a price below that on the world market. Moreover, since U.S. domestic supply will increase with increasing price and U.S. quantities demanded will decrease with increasing price, it can be anticipated that the U.S. energy demand/supply balances and associated import requirements generated by the domestic analyses of P/I alternative options will be strongly influenced by projected world market prices for oil.

5. Let us consider a typical U.S. domestic energy posture alternative characterized by a demand D_{US} (structured by consuming sectors and fuel mix) and a domestic supply S_{US} at a world price P_W. The actual costs of importing the quantity

$$I_{US} = D_{US} - S_{US} \qquad (1)$$

will be

$$I_{US} \times (P_W + T_I) \qquad (2)$$

where T_I represents an import tariff of some sort per barrel of oil.

6. There is a hidden cost to this posture, the cost of the risk of supply interruption, which requires considerable quantitative and qualitative analysis to make explicit. This cost can be expressed analytically in terms of certain functions and factors which must be subsequently developed through a series of interrelated tasks to be conducted as part of the international assessment effort. In its simplest form, if $\pi (I_{US})$ is the probability of an interruption of I_{US} and $C (I_{US})$ is the cost of such an interruption, then the expected cost of the import posture I_{US} due to insecurity of supply is given by

$$\Omega = \pi (I_{US}) \times C (I_{US}) \qquad (3)$$

7. The preceding expression (3), assumes a "perfect" ability to embargo imports. Depending, however, upon the structure and organization of the world oil producing, refining and distribution systems, embargos may be partially offset (e.g., leaks during recent embargo). Thus, expression (3) can be modified by a "coupling coefficient," λ, which relates producer country export denial to U.S. import reduction (λ will vary between 0 and 1), i.e.,

$$\Omega = \pi (I_{US}) \times C (\lambda I_{US}) \qquad (4)$$

8. Finally, the impact of an interruption in imports can be at least partially further offset by some combination of reserve supply or standby production capacity Q. Any costs R(Q) associated with maintaining this reserve should logically be assigned to Ω. Thus, we have Ω in its form as

$$\Omega = \pi (I_{US}) \times C (\lambda I_{US} - Q) + R(Q) \quad (5)$$

9. Some broad policy rationales suggest themselves even at this highly aggregated development of the issues. Since the object of a domestic reserve supply program should be to offset or minimize the expected costs of import interruption, then reserves should be maintained to the point at which the marginal cost of increasing reserve supply is equal to the marginal expected cost of incurring an interruption in supply of net amounts ($\lambda I_{US} - Q$). Needless to say, the value of such policy insights does not depend on the determination of numerical values for the factors involved.

10. A similar policy rationale suggests itself for establishing an import tariff program. Indeed, the expected cost, Ω, of an import posture I_{US} should be internalized in the price of U.S. imports, and one obvious way of doing so is by means of the tariff T charged for importing the oil. Thus, taking account of expressions (2) and (5) above, we have

$$I_{US} \times T = \pi (I_{US}) \times C (\lambda I_{US} - Q) + R(Q) \quad (6)$$

11. Our considerations, at this point, are only tentative. However, the potential of this approach for focusing the international assessment effort and meaning fully interrelating various domestic and international energy policy options under Project Independence appears highly promising.

IV MAJOR TASKING

1. The analytical effort required to develop the international assessment will be carried out by the following seven (7) working groups:

(A) World energy baseline projection

(B) Probabilities of supply interruption for alternative import patterns

(C) Import/tariff tax system alternatives

(D) Domestic energy reserve supply/distribution alternatives

(E) λ (coupling) coefficients for alternative world oil industry alternative configurations

(F) U.S. costs for various levels of import interruption

(G) Integration of task outputs to provide net (international) assessments of alternative Project Independence program options.

2. The overall effort will be chaired by IEA with interagency working groups (supported as appropriate by contractors) formed to work in each task area.

3. The following is the tentative study plan schedule:

Study outline, tasking, terms of reference....25 April

Review study plan, task force designations....~~29~~ 30 April

- Arrange 2 hour discussion sessions with individual task leaders

Coordinate interagency working group task plans..... 3 May

Draft reports of working group study tasks....14 June

Interchange international task drafts, also receive and review domestic task drafts (due early June)

Revised international task force inputs.....19 July

Draft Final International Assessment Report... 9 August

Final International Assessment Report..... 1 September

V TASKS AND WORKING GROUP ORGANIZATION

Task I. World Energy Baseline Projection Through 1985/1990.

Purpose. To establish the feasibility of meeting various levels of future U.S. import requirements to identify economic and political determinants which will shape future world (including parametrized U.S. import levels) energy demand and supply balances.

Membership: Treasury, NSC, CIA, FEO, CEA, State

Chairman: FEO

Subtask One: Provide projections of overall world energy demand and supply by major consumer country. Provide projection of likely supply patterns, price and oil flows. Provide sensitivity analysis of the impact of alternative demand and supply patterns on the price and stability and reliability of supply. Compare USG projections with OECD and other international studies currently underway. Evaluate the impact of alternative national policies regarding the development of North Sea and other areas outside the Middle East as well as inside.

Lead Agency: CIA/NSC

Subtask Two: Evaluate the foreign policy problem associated with the most likely projections prior to Project Independence.

Lead Agency: State

Task II. Probabilities (π) of Supply Interruption for Alternative Import Patterns.

Purpose: To assess the vulnerability associated with various levels of imports and evaluate alternative safeguards aimed at compensating for the vulnerability.

Membership: FEO, DOD, NSC, State, Treasury, CIA, Commerce, MARAD, Contractor

Chairman: FEO

Subtask One: Assess supply diversification alternatives on π. Evaluate the likelihood of sizable future cutoffs based on a projection of the likely supply diversification of future imports, evaluate the political likelihood of embargo. Investigate the possibility of diversifying away from this most likely supply pattern and the political/economic costs associated with this - the international and political initiatives needed.

Lead Agency: State/CIA

Subtask Two: Assess ownership and control of production and refining associated with world petroleum industry on π.

Currently, the world petroleum market deals relatively inter-changeably with crude oils regardless of source.

This is because of the international character of the energy industry and its ownership. Its interests can aggregate, (supernational) and may be further complicated by sharing arrangements between consuming countries.

Evaluate the implications of disaggregating -- i.e., nationalizing -- the ownership of this industry on import security.

This has two aspects:

a. Transportation

b. Refineries

The world petroleum transportation system analysis cannot logically proceed independently of the world refinery network since U.S. import shipping routes, volumes and crude oil/refined product mixes and resupply alternatives are bound together. Thus, for the transportation study plan which follows, it is indispensible to coordinate with the world wide refinery projections and alternatives developed in the baseline world market projections of Task I.

Lead Agency: FEO

Subtask Three: Ownership and control of transportation.

3.1 Ownership and control of tankers by OPEC and OAPEC: Producer countries are interested in investing in shipping. Conceivably various individuals or groups of nations could apply their power to deny or constrict the oil imported by the U.S. and its friends or allies.

The work in this area would draw predominately on the project presently conducted by Wayne Malbon of FEO along with the National Maritime Commission.

3.2 Freedom of navigation as applied to international tanker shipments: Tanker shipments could be restricted by coastal countries by interdiction or other means.

Lead Agency: FEO/Leigh Ratiner

3.3 The possibility of control over shipping being exercised in the Persian Gulf and the Horn of Africa: This issue would consider scenarios involving endangerment of the shipment of oil from the Gulf and the threats that this poses to the interests of the U.S.

3.4 The possible consequences of the opening of Suez Canal: This issue would be examined in conjunction with 3.3 above from the standpoint of how the economic and political interests of the U.S. may be affected by the opening of the Canal. Also included would be an examination of the implications of the construction of the SUMED pipeline parallel to the Suez Canal and the construction of refineries in the area. A further aspect would consider whether transit fees could be manipulated adversely by Egypt on oil traffic through the Canal.

3.5 Assessment of new U.S. Panamanian Treaty on the Panama Canal: This issue would review the provisions of the Treaty from the standpoint of the future security of oil shipments through the Canal and the extent to which Panama could affect the cost of navigation in transit.

3.6 Assessment of international pipeline supply network: This issue would review and evaluate the impact of control over international pipeline supply on the security of supply.

Lead Agency: MARAD

Subtask Four: Assess international economic factors on .

This will involve the evaluation of the world economic interactions with Project Independence in general and in particular.

4.1 Evaluate the interaction of various scenarios with the lesser developed nations. What problems does it pose for existing commercial and trade policy? How does Project Independence relate to other U.S. commercial policies? How will it impact on U.S. relations with producer countries? (Do not include analysis if alternatives to oil import fee system considered in working group force.)

4.2 Evaluate the interactions with world trade, GATT policies and other aspects of our international trade policy. Evaluate the balance of payments implications of various scenarios (will the higher price of energy likely under Project Independence hurt the U.S. international competitiveness?).

4.3 Evaluate the interactions of world monetary system and reform. Given the likely flow of crude under various scenarios for Project Independence, what are the implications for the world monetary system and reciprocally how does the world monetary system affect π ?

Membership: State, FEO, Commerce, Treasury, CIEP

Lead Agency: Treasury

Subtask Five: Assess national security relationship to π .

Purpose: Evaluate U.S. military posture implications on security of alternate import patterns, i.e., on π . Also evaluate threat of import interruptions to strategic security interests of U.S.

5.1 Evaluate impact of U.S. military posture on π in crisis and local/general war scenarios.

5.2 Evaluate implications of (1.1) on international alliances.

Membership: DOD, State, FEO

Lead Agency: DOD

Task III. Develop Import Tax System Alternatives

Purpose: The future price of U.S. domestic oil/gas can be expected to exceed the international price for a number of reasons including relative production costs. Thus, a form of import tax may well be necessary to support the investment/energy development options under Project Independence. On the other hand, a barrel of future U.S. domestically produced oil is worth more than a barrel of imported oil (at least from certain foreign countries) because U.S. produced oil does not have to bear the latent but real costs associated with the risks of supply interruption.

1.1 Evaluate the economic and other implication of subsidy program, tariff, and quota system on domestic energy prices, security for investment, balance of payments, and international competitiveness.

1.2 Coordinate analyses in (1.1) with Task IV evaluations of alternative means for providing a U.S. domestic energy reserve supply/distribution system.

Membership: NSC, Commerce, Treasury, CEA, CIEP

Lead Agency: FEO

Task IV. Develop Domestic Energy Reserve Supply/Distribution Alternatives

Purpose: Identify options and compare costs and benefits of providing emergency energy supplies in the event of an import interruption.

Membership: FEO, State, OMB, CEA

1.1 Evaluate the cost effectiveness of standby emergency supply programs including the investment and other costs associated with increasing the time necessary to bring on-stream alternative supply sources such as Elk Hills, NPR-4, etc. The work will include description of necessary legislation. Finally, the work should evaluate the cost and effectiveness of coal substitution programs - including the availability of standby coal production capability and stockpiling.

Purpose: to develop a package of standby legislation that could be activated by executive action along the lines of the Defense Production Act.

Lead Agency: CEA

1.2 Stockpiling: Evaluate the cost of stockpiling various quantities of crude oil or providing shut-in capacity. Include analysis of the standby distribution system that would be required and relate this to the desirability from the national security standpoint of building domestic refinery capacity. Assess the vulnerability associated with relying on refineries located outside the continental U.S. -- e.g., in the Caribbean.

Lead Agency: FEO

1.3 Evaluate the cost and effectiveness of standby mandatory conservation programs including the legislation needed to have confidence in their effectiveness.

Purpose: To draw up a legislative package for ultimate submission to Congress.

Lead Agency: FEO

Task V. Develop λ (Coupling) Coefficients for Alternative World Oil Industry Configurations

Purpose: Identify the coupling coefficients associated with various tanker sizes, port facilities, and industry structures associated with foreign crude supplies, as they impact on the passing through of crude and product from producer to consumer. This effort must be closely coordinated with that of Task II.

What are the effects on the coupling coefficient associated with telescoping the impact of tanker and/or facility losses, as tanker size increases?

What are the changes in coupling coefficients at various levels of nationalization resulting from tanker size?

What actions can be taken to reduce these coefficients?

Assume scenarios:

a. Ramdom loss

b. Political interruption

c. Hot war

What are the changes in coupling coefficients on the ownership?

(Must draw on geographic probability studies.)

Membership: FEO, MARAD, DOD, Contractor

Lead Agency: FEO/MARAD

Task VI. Develop U.S. Costs for Various Levels of Import Interruption

Purpose: To be able to evaluate costs to U.S. economy as a result of import supply interruptions of various levels and durations.

1.1 Evaluate the economic vulnerability associated with various import levels with no safeguards and under likely future energy consumption patterns. Evaluate the economic impact of energy supply cutoffs (e.g., petroleum) of various sizes -- taking into account the capability to shift refinery output and take other action to focus reductions in those economic sectors where unemployment will be impacted least.

Lead Agency: FEO (Domestic Task Force)

1.2 Evaluate practical extent to which U.S. energy consumption/domestic supply patterns could be structured to minimize costs of interruption in imports.

Lead Agency: CIA/FEO

1110/EP

NIO #: 873-74

29 April 1974

MEMORANDUM FOR : Director, Office of Economic Research
Acting NIO for Economics

SUBJECT : Project Independence: International Assessment

1. The scope of the proposed paper is staggering.

2. The assignment of responsibilities for tasks, sub-tasks, etc. does not appear to relate to capabilities to perform.

3. CIA is really asked to do three things:

(a) Prepare a projection of overall world energy demand and supply by major consuming countries (Task I -- Sub-task one on page 7).

(b) Assess foreign sources for future U.S. imports, possibility of interruptions, embargoes, etc. and, possibilities for diversifying away from most likely pattern of foreign supply sources.

(c) Assess how domestic consumption/supply could be structured to minimize costs of interruptions in imports (Task VI, 1.2, page 15).

4. The task under 3(c) above is inappropriate for CIA -- domestic U.S. matter. This is probably an error.

5. I do not think that CIA (nor the intelligence community) should at this point volunteer to participate in other tasks even though we have a capability. We should let the assignments stand and be prepared to make bilateral support arrangements with a lead agency or department when requested. Alternatively, we may wish to do some independent work and publish it in the IOD.

25X1

6. This task is, as a whole, probably well beyond the capability of the USG in the time allocated.

7. I propose to have [redacted] represent us at the Tuesday meeting. 25X1

[redacted] 25X1

James H. Critchfield
NIO/Energy

NIO/Energy/JHCritchfield:hfs

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